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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/657,846

09/09/2003

Christopher Richard Doerr

Doerr 75 (LCNT/125666)

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04/14/2005

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EXAMINER

KIANNI, KAVEH C

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 04/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/657,846

Applicant(s)

DOERR, CHRISTOPHER
RICHARD

Examiner

Kianni C. Kaveh

Art Unit

2833

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2003 and 07 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 17 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,9,10,12 and 14 is/are rejected.
- 7) ☒ Claim(s) 2,5-8,11,13,15 and 16 is/are objected to.
- 8) ☒ Claim(s) 17 and 18 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This application contains claims directed to the following patentably distinct species of the claimed invention: I. Claims 1-16 are directed to a band filter including wherein the waveguides of each set are spaced at their connections to the first waveguide grating router such that optical signals having overlapping frequency ranges are propagated through adjacent waveguides and the waveguides of each set are spaced at their connection to the second waveguide grating router; II. Claims 17-18 are directed to wherein the connecting waveguides have increased gaps between sets of waveguides at their connection to the second waveguide grating router. Thus each of the above group inventions requires a separate search than that of other invention, the restriction is proper.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, none of the claims are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include

all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Mr. Wall on 4/7/05 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-16. Affirmation of this election must be made by applicant in replying to this Office action. Claims 17-18 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitation of claim 12 'segmentation fibers on inner slab-to-waveguide-array' means that reduces losses must be shown or the features be canceled from the claims. No new matter should be entered. Other elements, 'the band filter 100', stated in at least page 4, the center (C) and long (L) of figure 2, stated in page 6, must be shown in relevant Figures.

A proposed drawing correction or corrected drawings are required in reply to the office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 recites wherein the number of sets of connecting waveguides is equal to the number of bands an input signal is separated into by the band filter in lines 20-23, page 11. It is not clear what the claimed limitation 'bands an input signal' is. Correction is required, and they maybe allowable once the correction is made. Claim 10 depends on claim 9 and therefore it is also rejected.

Allowable Subject Matter

Claims 2, 5-8, 11, 13, 15 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 2 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein each set of waveguides contains two or more waveguides having path lengths that are substantially equal to within a few wavelengths, and wherein the waveguides are spaced at their connection to

each waveguide grating router such that the waveguides substantially spectrally perfectly sample or over-sample the waveguide grating routers in combination with the rest of the limitations of the base claim.

Claims 5-6 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein output waveguides of the band filter are spaced by the size of the gaps of the connection to the second waveguide grating router minus one waveguide spacing, multiplied by the lensing magnification factor of the second waveguide grating router in combination with the rest of the limitations of the base claim.

Claims 7-8 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious dummy waveguides inserted in the gaps in combination with the rest of the limitations of the base claim.

Claims 13 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein the connecting waveguides comprise a spectral sampling coefficient ranging from 1.07 to 1.01, from the shortest to the longest wavelength, respectively in combination with the rest of the limitations of the base claim.

Claims 11, 15 and 16 are allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein said band filter is integrated onto a single planar lightwave circuit chip in combination with the rest of the limitations of the base claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 3-4 are rejected under 35 U.S.C. 103(a) as being obvious over Doerr et al. (US 6240118).

The applied reference has a common Assignee and inventor(s) with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2).

Regarding claim 1 and 12, Doerr teaches a band filter (shown in at least fig. 4), comprising: a first waveguide grating router 403;
a second waveguide grating router 402;
and a plurality of waveguides connecting the first waveguide grating router 403 to the second waveguide grating router 402;
wherein the connecting waveguides comprise one or more sets of waveguides 404,405 and wherein the waveguides of each set are spaced at their connections to the first waveguide grating router 403;
and the waveguides of each set are spaced at their connection to the second waveguide grating router 402 such that optical signals with predetermined optical frequency ranges are routed to selected, respective output ports (see at least col. 4, last parag.-col. 5, 1st parag.).

However, Doerr does not specifically teach regarding the above spaced waveguide sets wherein optical signals having overlapping frequency ranges are propagated through adjacent waveguides, and segmentation fibers on inner slab-to-waveguide-array junctions of the first and the second waveguide grating routers to reduce insertion loss. It would have been obvious/well-known to a person of ordinary skill in the art when the invention was made that depending to frequency bandwidth the waveguide gratings would either route/pass the signals through adjacently spaced waveguides connected to WGR 403 to propagate toward WGR 402, or filter and/or cut-off unwanted frequency range and only route the overlapping/wanted frequency range

through adjacent waveguides (see at least col. 4, last parag.-col. 3, 1st parag.), and to use segmentation fibers on inner slab-to-waveguide-array junctions of the first and the second waveguide grating routers to reduce insertion loss since such using of segmented fiber are conventional and since such optical routing would provide output control of optical signals from star couplers (see col. 1, 2nd parag.).

Regarding claim 3-4, Doerr further teaches wherein the connecting waveguides are positioned at their connections to the first waveguide grating router and the second waveguide grating router to optimize the low-loss propagation of optical signals within one or more predetermined optical frequency ranges (see at least col. 3, 3rd parag.+; wherein the loss is almost zero); wherein each of the sets of connecting waveguides are contiguous at their connection to the first waveguide grating router and have increased gaps between bands at their connection to the second waveguide grating router (shown in fig 4, see bands between sets of WGR 415 and 402).

Claim 1, 3-4, 12 and 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hansen et al. (US 2002/0063928).

Regarding claims 1 and 12, Hansen teaches a band filter (shown in at least figure. 7), comprising: a first waveguide grating router 721;
a second waveguide grating router 722;
and a plurality of waveguides Ls connecting the first waveguide grating router 721 to the second waveguide grating router 722;

wherein the connecting waveguides Ls comprise one or more sets of waveguides (see sets of waveguides Ls with spacing a_0) and wherein the waveguides Ls of each set are spaced a_0 at their connections to the first waveguide grating router 721/722; and the waveguides Ls of each set are spaced at their connection to the second waveguide grating router 722 such that optical signals with predetermined optical frequency ranges are routed to selected, respective output ports (see figure 7, items Ls and 722, and see abstract and parag. 0030; wherein predetermined frequency ranges coming from WGR 721 waveguides are output/routed through the WGR 722).

However, Hansen does not specifically teach regarding the above spaced waveguide sets wherein optical signals having overlapping frequency ranges are propagated through adjacent waveguides and segmentation fibers on inner slab-to-waveguide-array junctions of the first and the second waveguide grating routers to reduce insertion loss. It would have been obvious/well-known to a person of ordinary skill in the art when the invention was made that depending to frequency bandwidth the waveguide gratings would either rout/pass the signals through adjacently spaced waveguides connected to WGR to propagate toward WGR 702, or filter and/or cut-off unwanted frequency range (see at least parag. 0004, and 0030), and to use segmentation fibers on inner slab-to-waveguide-array junctions of the first and the second waveguide grating routers to reduce insertion loss since such using of segmented fiber is conventional since such optical routing would provide cost effective technique for limiting dispersion in optical transmission (se parag. 0003).

Regarding claim 3-4 and 14 Hansen further teaches wherein the connecting waveguides are positioned at their connections to the first waveguide grating router and the second waveguide grating router to optimize the low-loss propagation of optical signals within one or more predetermined optical frequency ranges (see at least abstract; wherein optical dispersion/loss is about zero); wherein each of the sets of connecting waveguides are contiguous at their connection to the first waveguide grating router and have increased gaps between bands at their connection to the second waveguide grating router (shown in fig. 7, items sets with increasing gaps forming a spacing); wherein said first waveguide grating router, said second waveguide grating router and said plurality of connecting waveguides are integrated on a single planar lightwave circuit (see parag. 0030).

Citation of Relevant Prior Art

Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In accordance with MPEP 707.05 the following references are pertinent in rejection of this application since they provide substantially the same information disclosure as this patent does. These references are:

Chandrasekhar 6400860

Glance 5488500 teaches at least claim 1

Li 5745618

Yoo 6519062

Doerr et al. 6304350 teaches at least claim 1

These references are cited herein to show the relevance of the apparatus/methods taught within these references as prior art.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Cyrus Kianni whose telephone number is (571) 272-2417.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (571) 272-2415.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9306 (for formal communications intended for entry)

or:

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.

A handwritten signature in dark ink, appearing to be 'K. Kianni', followed by a long horizontal line extending to the right.

K. Cyrus Kianni
Patent Examiner
Group Art Unit 2883

April 8, 2005